

**Claims**

1. A device for examining chemical and/or biological samples, comprising  
a sample carrier (10) for receiving the samples,  
an objective (14) for observing the samples through a sample carrier wall (12), wherein a gap (20) is defined between an outer surface (18) of the sample carrier wall (12) and an exit lens (16) of the objective (14),  
a film (22) of an immersion medium to be provided in the gap (20) such that the film is in contact with both the outer surface (18) of the sample carrier wall (12) and the exit lens (16) of the objective (14), and  
a protection means (24) surrounding the exit lens (16) for preventing the objective (14) from becoming fouled by the immersion medium, wherein the protection means (24) is connected with a suction means for discharging the immersion medium,  
characterized in that  
the protection means (24) comprises a capillary channel (30) connected with the suction means for discharging the immersion medium.
2. The device according to claim 1, characterized in that the capillary channel (30) is essentially configured as an annular gap around the exit lens (16).

3. The device according to claim 1 or 2, characterized in that the protection means (24) comprises at least two collar portions (26,28) arranged around the objective (14) and defining the capillary channel (30).
4. The device according to one of claims 1-3, characterized in that the protection means (24) comprises an overflow reservoir (36) for additionally receiving immersion medium.
5. The device according to claim 4, characterized in that the overflow reservoir (36) comprises a reservoir bottom (38) having a reservoir bottom opening (40) via which the capillary channel (30) is connected with the overflow reservoir (36).
6. The device according to one of claims 1-5, characterized by a supply means comprising a supply line (42), wherein an outlet opening of the supply line (42) is arranged that near the exit lens (16) of the objective (14) that immersion medium is supplied into the gap (20) at least partly with the aid of capillary forces.
7. The device according to one of claims 1-6, characterized in that the capillary channel (30) is connected with a supply means for supplying immersion medium, and the capillary channel (30) comprises a capillary channel opening (32) which is arranged that near the exit lens (16) that immersion medium is supplied into the gap (20) at least partly with the aid of capillary forces.
8. The device according to claim 7, characterized in that the capillary channel (30) is connected with a valve, in particular a 3/2-way valve, wherein the valve is connected with the suction means and with the supply means.

9. A method for examining chemical and/or biological samples, wherein an exit lens (16) of an objective (14) is arranged opposite a sample carrier (10) for observing the sample through a sample carrier wall (12), wherein between an outer surface (18) of the sample carrier wall (12) and the exit lens (16) of the objective (14) a gap (20) is defined such that in the gap (20) a film (22) of an immersion medium is arranged which is in contact with both the outer surface (18) of the sample carrier wall (12) and the exit lens (16) of the objective (14),

characterized in that

via a capillary channel (30) defined in the protection means (24) surrounding the objective (14) the immersion medium is discharged automatically, at least with the aid of capillary forces.

10. The method according to claim 9, characterized in that the immersion medium is supplied automatically, at least partly with the aid of capillary forces.
11. The method according to claim 10, characterized in that the discharge of the immersion medium is adjusted relative to the supply such that the volume of the film (22) of immersion medium essentially remains constant.
12. An objective cap for protecting an objective (14) from becoming fouled by an immersion medium, comprising
  - an inner collar portion (26) adapted to be placed onto the objective (14),
  - an outer collar portion (28) arranged around the inner collar portion (26), wherein the inner collar portion (26) and the outer collar portion

(28) are at least partly spaced relative to each other such that an essentially annular capillary channel (30) is defined, and

an outlet opening (34) provided in the outer collar portion (28), via which opening the capillary channel (30) is connected with a suction means.

13. The objective cap according to claim 12, characterized by an overflow reservoir (36) arranged in the outer collar portion (28) for receiving the immersion medium, wherein the overflow reservoir (36) comprises a reservoir bottom (38) having a reservoir bottom opening (40) via which the capillary channel (30) is connected with the overflow reservoir (36) for discharging immersion medium.